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Implementing a Positive Variation of the Good Behavior Game with the Use of a Computer-Based Program

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IMPLEMENTING THE USE OFA POSITIVE VARIATION OF THE GOOD BEHAVIOR GAME WITH THE USE OF A COMPUTER-BASED PROGRAM

by

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ABSTRACT

IMPLEMENTING THE USE OF A POSITIVE VARIATION OF THE GOOD BEHAVIOR GAME WITH THE USE OF A COMPUTER-BASED PROGRAM

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The Good Behavior Game (GBG) is an interdependent group contingency designed to address behavioral concerns. The vast majority of published findings on the GBG have supported its effectiveness in decreasing disruptive behavior in classroom settings. The purpose of this study was to investigate the effectiveness and the social validity of a positive variation of the GBG in which teachers were asked to use ClassDojo to manage each team's progress. ClassDojo is a computer-based program that enables teachers to track student behavior and monitor progress by way of a virtual system. Dependent variables included class-wide disruptive and academically engaged behavior (AEB), teachers' ratings on the Behavior Intervention Rating Scale (BIRS), and the rate of teacher praise statements delivered in each phase. Overall, results indicated that a positive variation of the GBG with ClassDojo was effective at reducing disruptive behavior, increasing AEB, and was rated as socially valid. Additionally, when the GBG was in place, increases in the amount of behavior-specific praise (BSP) statements delivered were observed across all three classrooms.

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DEDICATION

This work is dedicated to Irene Long Stephens.

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LIST OF ABBREVIATIONS

GBG	Good Behavior Game
PBS	Positive Behavioral Support
AEB	Academically Engaged Behavior
BSP	Behavior-Specific Praise

CHAPTER I - INTRODUCTION

Schools are presented with the task of creating enriched learning environments. This could be considered a daunting challenge even if schools only had the academic needs of students to consider, but schools must be able to meet the behavioral needs of students as well. To assist students with academic problems, schools may offer tutoring, additional time to complete assignments, or allow them to work in small groups with their peers. When addressing students with behavioral problems, however, schools typically use punitive methods such as office discipline referrals, detention, suspension or expulsion (Bidell & Deacon, 2010; Osher, Bear, Sprague, & Doyle, 2010).

These punitive discipline methods are often reactive in nature and have not been proven effective in teaching appropriate behavior (Skiba & Peterson, 2000). Further, discipline methods which result in school/class removal often result in a loss of instructional time and create and/or exacerbate academic problems for students who exhibit behavior problems (Bidell & Deacon, 2010; Farmer & Farmer, 1999). Additionally, problem behavior in classrooms has been linked to teacher burnout (Allen, 2010; Friedman, 1995), and disorderly classrooms have been found to yield lesser academic gains than classrooms in which teachers spend less time and energy responding to problem behavior (Gaskins, Herres, & Kobak, 2012). Unfortunately, students who demonstrate frequent problem behavior in school are also more likely to become rejected by peers and experience difficulty with learning (Lochman et al., 2010) which can result in the student becoming disengaged with the academic environment (Bidell & Deacon, 2010), and puts them at higher risk for problematic behaviors like substance abuse (Henry, Knight, & Thornberry, 2011) and dropping out of school (Farmer & Farmer,

1999). There are alternative methods of mitigating behavioral concerns in schools, and one of the primary methods that schools are progressively adopting is the use of positive behavioral supports (PBS) systems.

PBS is an evidence based system of supports delivered along an organized spectrum of three tiers or levels of services, and unlike the previously discussed discipline methods, PBS was constructed to be preventative and proactive (Sugai & Horner, 2002a). Another feature of PBS that differentiates it from typical punitive methods is that PBS is designed to teach or reinforce desired behaviors, and to track progress via progress monitoring. The goal of Tier I within the PBS framework is to provide a school-wide system which encourages academic progress and appropriate behavior, while discouraging factors which contribute to disruptive behavior (Sugai & Horner, 2002b). Tier II supports are put in place specifically for students who fail to respond to Tier I level supports, and persist in demonstrating problem behavior. The intention of Tier II is to reduce problem behavior by ramping up access to reinforcement for appropriate behavior (Sugai & Horner, 2002b). Tier III level supports are the most individualized, and to be used with students who are unresponsive to Tier II level supports (Sugai & Horner, 2002b).

Tier II interventions are typically targeted for groups of students, or classes in which disruptive behavior is higher than other classrooms. Group contingencies are just one of many approaches to Tier II supports, but one that could be considered highly efficient as they do not require intensive amounts of effort from the teacher. They are reasonably simple to train and carry out in a classroom setting, and rewards need not be individualized for each student, but the group of students work toward the same reward

(Theodore, Bray, Kehle, & Dioguardi, 2004). There are three types of group contingencies, the first of which is the dependent type. Dependent group contingencies are structured such that the consequence for the entire class is determined by the behavior of just one, or a few students. The second type of group contingencies are called independent group contingencies, in which each student is only responsible for their own outcome. Interdependent group contingencies are the third type of group contingency, in which the consequences for the entire group is based upon the group's ability to meet a certain goal together (Litow & Pomroy, 1975).

Noted benefits of interdependent group contingencies over other types of group contingencies include: 1) promotion of collaborative relationships or efforts among students, 2) providing a time-efficient way of managing behavior for the teacher, as there is only one contingency program to manage, 3) maintaining the same consequences for behavior across all students and 4) rewards are not limited to tangible items as the choices of rewards are modified for class-wide dispersal, which may include options such as additional computer/recess time or homework passes, and 5) all students in the winning group/groups are able to enjoy their accomplishments together (Theodore et al., 2004). Some potential drawbacks of interdependent group contingencies are: 1) if a team does not earn a reward even though some students in the group have behaved appropriately, they may feel like they are being unfairly treated and this may increase the possibility that they misbehave, 2) blaming behavior may occur or increase as students may lash out on students who contributed to their failure to obtain their shared goal, 3) some teachers or other stakeholders may not approve because within this framework, students who misbehave regularly may still obtain access to rewards if his/her group

meets the predetermined criterion in spite of their misbehavior (Skinner, Cashwell, & Dunn, 1996). The Good Behavior Game (GBG) is an example of an interdependent group contingency in which a classroom is divided into teams, and each team works together toward a common goal.

The Original Version of the Good Behavior Game

In 1969, the first research article about the GBG was published. Barrish, Saunders, and Wolf investigated the use of the intervention in a fourth grade classroom. The target behaviors in the study were identified as out-of-seat behavior and talking out which the authors report were to be reduced. During the GBG phase, the teacher divided the class into two teams and explained the classroom rules. The teacher also explained to the class that if any student disobeyed a rule, then a mark would be assigned to the team of that student and if any team was able to earn five or less marks during their math period, then that team, or teams would win the game and obtain a reward. Further, any team that earned twenty marks or less during the course of the week would be awarded with extra recess time.

To evaluate the effectiveness of the GBG in their study, Barrish and colleagues (1969) used an A/B/A/B multiple baseline design, across reading and math periods. Talking-out behavior occurred at a median of 96% of intervals, while out-of-seat behavior occurred at a median of 82%. When the GBG was implemented in the math period, talking-out decreased to 19% and out-of-seat behavior declined to 9%. The researchers reported that decreases in the target behaviors were also observed in the reading period, however percentages of interval data for other periods and subsequent phases were not reported.

The Good Behavior Game in Elementary School Classroom Settings

Medland and Stachnik (1972) followed up the 1969 study with another investigation of the GBG, this time in a fifth grade classroom. In their study, Medland and Stachnik (1972) evaluated the effect of the GBG on three target behaviors—out-of-seat behavior, talking-out and disturbing other students. Their experimental design was comprised of six phases: Baseline 1, Game 1, Baseline 2, Rules, Rules + Lights, and Game 2. During "Game" phases, the authors employed the original version of the GBG which included developing and reviewing classroom rules, dividing the rules into teams, and assigning points to teams upon any student's violation of the rules. They further combined the original version with a light signaling system. In a central location in the classroom, there was a light that was able to illuminate either green or red. When the green light was illuminated, it signaled that the team was demonstrating appropriate behavior, whereas a red light signaled that a team member had broken one or more rules. In the "Rules" phase, the teacher would only review the classroom rules, and in the "Rules + Lights" phase, the teacher would review the rules and the light system would be utilized, but the GBG would not be played. Medland and Stachnik (1972) reported that Game phases resulted in an average of five occurrences of disruptive behavior per session, per team, which was the lowest occurrence of disruptive behavior across all phases. Occurrences of disruptive behavior were higher in the Rules phase with an average of 29 occurrences per session per team, and during the Rules + Lights phase, disruptive behavior averaged 7 occurrences per session, per team.

In 1973, Harris and Sherman conducted a component analysis on the GBG and sought to determine if implementation would impact academic performance. Their

participants were students of one fifth grade, and one sixth grade classroom. Disruptive behavior was the primary dependent variable, and included talking-out and out-of-seat behavior. The secondary dependent variable was academic performance, which was only evaluated in the fifth grade classroom and was measured by the number of math problems correct. Following the baseline phase, each classroom was split into two teams and the GBG was implemented. Winning teams were awarded a 10-minute early dismissal from school. To conduct the component analysis of the GBG, the authors used four manipulations: 1) the reward for the winning team was removed; 2) the number of points needed to win was decreased from eight marks to four marks, then restored to eight marks and finally decreased again to four; 3) points earned by teams were not displayed on a board, but visible only to the teacher instead; and 4) the class as a whole was treated as one team rather than divided into smaller teams.

Results were not reported in terms of exact percentages; however, estimated figures and other descriptions of what was observed were used to explain the outcomes of the study. The authors explained that talking-out behavior occurred on average "at or near 100% in both math periods" (Harris, et al., 1973, p. 409) during baseline, however after the GBG was implemented talking-out behavior decreased to an average of 8% of intervals. The authors also reported that out-of-seat behavior occurred at "above 50%" (Harris & Sherman, 1973, p. 409) of intervals on average during baseline, but once the GBG was introduced, out-of-seat behavior declined to an average of 2% of intervals. The authors further indicated that there were comparable results found in the sixth grade classroom.

In the first manipulation for the sixth grade class, the reward component was eliminated. Problem behavior declined; however, the authors noted that the decreases were smaller than when rewards were earned, although no numerical data were presented to support this statement. Next, the researchers observed changes in behavior due to criterion changes; when the criterion was set at eight, disruptive behavior was higher than when the criterion was set at four. Researchers also observed that there was no change in disruptive behavior whether feedback was public or withheld. Further, the authors stated that results were variable when the class played as a whole team. Regarding academic performance, the authors reported that fifth grade students were more accurate in math problems completed during GBG phases.

The Good Behavior Game in Special Education Classrooms

In 1979, Hegerle, Kesecker, and Couch investigated the use of the GBG in a self-contained special education classroom. Target behaviors were out-of-seat and talking out behaviors. The GBG was played for forty five minutes per day over a five-week period. The researchers implemented the GBG on Mondays, Tuesdays, Wednesdays and Thursdays, and on Fridays the teacher would implement the GBG. Over the course of the five-week period, the criterion for students to earn rewards was gradually reduced from twenty-five marks per team, to two marks per team. A frequency count for out-of-seat and talking-out occurrences was collected during the course of the study. During baseline, talking-out occurred an average of 27.8 times during the class period, and out-of-seat behavior occurred 22.5 times, on average. At the conclusion of the study, talking-out had decreased to a mean rate of 2.6 times during the class period, while out-of-seat occurrences were reduced to an average of 0.8 occurrences.

The Good Behavior Game in Preschool Settings

In an unpublished dissertation, Hunt (2012) employed a multiple baseline design to investigate the effectiveness of the GBG in a preschool setting. More specifically, the impact of the GBG on disruptive and on-task behavior was examined. In the study, the GBG was played as in the original study (Barrish et al., 1969), with one modification, that the teams were not always comprised of the same students. Three classrooms were used in the study, in which data were collected for class-wide behavior and one target student in each class, as well. During baseline, disruptive behavior occurred for an average of 67% of intervals observed in Classroom A, 50% in Classroom B, and 46% in Classroom C. Academic engagement occurred for 32% of intervals observed, average for Classroom A, 50% for Classroom B, and 54% for Classroom C. Decreased disruptive behavior and increased academic engagement was observed across all three classrooms after the GBG was implemented. In Classroom A, disruptive behavior occurred for 22% of intervals observed, while Classroom B was reduced to 14% and Classroom C, 9%, on average. Academic engagement increased for Classroom A (M = 78%), Classroom B (M = 90%), and Classroom C, (M = 91%).

The Good Behavior Game in High School Settings

Mitchell (2012) examined the effects of the GBG within a three general education high school classrooms in an unpublished thesis. Inappropriate vocalizations, off-task behavior and out-of-seat behavior were target behaviors. An A/B/A/B withdrawal design was employed to investigate the impact of the GBG on each classroom, and a partial interval recording procedure was used to collect data on the aforementioned target behaviors. Disruptive behavior occurred during 67% of intervals for Classroom A, on

average, 74% for Classroom B and 65% for Classroom C. Upon implementation of the GBG, disruptive behavior decreased in all three classrooms (*M* = 30%, 35%, and 27% for Classrooms A, B, and C, respectively). Before the withdrawal phase, one classroom discontinued participation in the study; however, the other two classrooms continued through the withdrawal phase and finally the second intervention phase, where both Classroom A (*M* = 26%) and Classroom C (*M* = 27%) maintained decreased levels of disruptive behavior.

To investigate the impact of the GBG on off-task behavior of high school students with high incidence disabilities, Flower McKenna, and Muething (2014), employed an A/B/A/B withdrawal design and also included a follow-up phase two weeks after the second intervention phase had ended. Participants were students of two ninth grade algebra resource classes. They all had been identified with a specific learning disability, intellectual disability or classified as "other health impaired". For a primary dependent variable, the authors defined off-task behavior as time that the student was not attending to the assigned task or classroom instruction.

In reporting their results, Flower et al. (2014) reported ranges for each phase, while mean values were not reported. In Classroom 1, off-task behavior was observed for a range of 36% to 61% if intervals and during the GBG phase, off-task behavior decreased to a range of 0% to 13%. When the GBG was withdrawn, off-task behavior increased to a range of 43% to 69% and when the GBG was introduced again, off-task behavior occurred during a range of 0% of intervals to 45% of intervals observed. Two weeks later, a follow up phase was initiated and sustained for 4 sessions, during which off-task behavior ranged from 28% to 33%, even though the GBG was no longer in place.

In Classroom 2, off-task behavior ranged from 28% to 67% during the baseline phase and ranged from 6% to 24% during the first GBG phase. When the GBG was withdrawn, off-task behavior increased to a range of 27% to 84% of intervals observed, and when the GBG was implemented again, off-task behavior occurred for a range of 8% to 38% of intervals observed. During the follow up phase in which the GBG was no longer being played in the classroom, off-task behavior was reported to have ranged from 28% to 63% of intervals observed.

The Good Behavior Game International Settings

In the first study to examine the GBG in a setting outside of North America, Saigh and Umar (1983) investigated the use of the GBG in a second grade classroom located in rural Sudan. An A/B/A/B withdrawal design was used to investigate the effectiveness of the GBG in decreasing three target behaviors, which were identified as verbal disruption, physical disruption, and seat leaving. During baseline, verbal disruptions occurred during an average of 12% of intervals, physical disruption for an average of 8.5%, and seat leaving was observed during an average of 9.6% of intervals observed. The GBG was played for fifty minutes each school day for six days. Rewards for winning teams included additional free time and notes sent home to students' parents reporting good behavior. Decreases in target behavior were observed during intervention phases, and during the final intervention phase, verbal disruption occurred on average 2.9%, physical disruption occurred 1.9% and seat-leaving was observed 4.7% on average.

Nolan, Filter, and Houlihan (2013) sought to investigate the application of the GBG in three general education classrooms in Belize. The 32 student participants were between the ages of 6 and 12 years old. Target behaviors included sitting improperly,

talking out and tattling. The mean occurrence of disruptive behavior for Classroom 1 was 47% at baseline, for Classroom 2 the mean occurrence of disruptive behavior was 23% and for Classroom 3, the mean occurrences of disruptive behavior was 42%. The mean occurrence of disruptive behavior observed decreased for all three classrooms. For Classroom 1, disruptive behavior observed decreased to 9%, for Classroom 2, it decreased to 3%, and 8% for Classroom 3.

The Good Behavior Game in Non-classroom Settings

In 1979, Lutzker and Blackburn used the GBG outside of a school context. In their study, they sought to increase productivity in four state hospital residents who were asked to sort boards by size. The four residents were split into two teams and were told that for their performance, each team would be rewarded with candy or early work termination. The game used in this study was deemed a pseudo-competition because both teams always received the reward. Researchers did not present any numerical data but noted that there were improvements in work productivity and staff continued to use the GBG after the conclusion of the study.

In 2009, McCurdy, Lannie, and Barnabas examined the effects of the GBG in the cafeteria of a public elementary school. Ten non-instructional school staff members facilitated the game in each of the three lunch periods, each serving approximately 200 students. Target behaviors included out-of-seat behavior, play fighting, physical contact with force, throwing objects and screaming, and data were collected using a frequency count of the occurrence of these behaviors within a 10 to 15 minute observation period. The students were grouped into teams and each time a rule was violated, the staff member would state the rule that was violated and assign the team a point. Each week,

winning teams were those that stayed beneath a predetermined criterion of points. Potential rewards that teams could earn included edibles, small tangibles, certificates to earn movie time and classroom parties. A multiple baseline design was utilized to examine the effect of the GBG across lunch periods. Disruptive behavior decreased and remained below baseline levels for each lunch period once the GBG was implemented.

Variations of the Good Behavior Game

Among the many GBG studies, there are several which seek to modify it in such a way that the goal is the same—to decrease problem behavior—but the method is slightly different. Instead of attending to rule-breaking or undesired behavior, the focus is shifted to desirable, or rule-following behavior. This is an important change for a number of reasons; first, it frames behavioral expectations in a positive way, when the teacher explains the rules of the game, the aim is to behave in a way that will accumulate more points for your team, which is also more aligned with the goals of PBS. Second, these GBG variations enable a teacher to address problematic behavior, without providing attention to what may be attention-maintained behaviors. If a student is engaging in particular behaviors to seek attention, it may be counterintuitive to ask a teacher to attend to rule breaking behavior as in the original version of the GBG. Third, a variation of the GBG centered on desirable behavior educates students on what is expected of them, rather than advising them on what is unacceptable behavior only. Students are not only learning about expectations from the GBG and classroom rules, but they may also have additional opportunities to learn by means of vicarious reinforcement.

Robertshaw and Hiebert (1973) investigated the effects of an interdependent group contingency they called “The Astronaut Game”. Participants were first grade

students in a general education setting including a target student who had been referred via teacher referral for disruptive behavior. To play the game, the students were separated into six teams and were told that they would earn tokens for every page of completed work, and for exhibiting "good astronaut behavior" which encompassed class rules deemed appropriate before initiation of the game. All tokens were collected at the end of each day and the team with the most tokens would win first choice in free time activities for the remaining class time. Options for these activities included using the tape recorder and playing card games.

The dependent variable for the target student was a group of behaviors collapsed in a category called inattentive behaviors and included specific behaviors such as looking in a non-task related direction, talking/gesturing to others, tapping with a pencil, or playing with objects. A secondary dependent variable for the target student was attention-to-task behavior. The dependent variable for the entire class was the number of seatwork papers completed.

During baseline the target student's inattentive behavior occurred on average, 44% of intervals observed, while attention-to-task was on average 56% of intervals observed. During the intervention phase, inattentive behavior for the target student immediately decreased to 8% and averaged 4% during the intervention phase. The target student's attention-to-task behavior increased to an average of 96% of intervals observed during the intervention phase. The class seemed to be responsive to the intervention as well; during baseline, the class averaged, per week, 9.5 papers per student, but during the intervention phase the average immediately increased to 18 weekly papers completed, per

student. At the end of the intervention phase, the average had increased to 36 papers completed per student per week.

The Principal Game was another modified version of the original GBG, which was published by Darch and Thorpe in 1977. The participants were students of a general education fourth grade classroom. In their version, points were awarded to teams in which all members were demonstrating on-task behavior upon the presentation of an audible cue. Further, in their version, all inappropriate behavior was ignored. The experimenters also compared the interdependent group contingency with an independent group contingency, in which each student earned points independently to earn individual attention from the principal. Observers collected on-task and off-task behavior for ten target students who were referred by the teacher as most disruptive.

Darch and Thorpe (1977) used an A/B/A/C/A withdrawal design, and results were reported in terms of on-task behavior, exclusively. Students exhibited on-task behavior during a 26% of intervals observed, on average during baseline. Upon implementation of The Principal Game, on-task behavior immediately increased to 90% and was maintained throughout the intervention phase at an average of 86%. During the first withdrawal phase, on-task behavior declined to an average of 51% for the phase and continued on a decreasing trend until the independent group contingency was implemented. At that time, on-task behavior immediately increased to 84% and was maintained at an average of 75% for the entire phase. Finally for the second withdrawal phase, on-task behavior decreased to an average of 34% of intervals observed.

Fishbein and Wasik (1981) introduced the GBG to a fourth grade class at a North Carolina elementary school. Target behaviors were classified as task relevant behavior,

off-task behavior and disruptive behavior. The GBG was played in the classroom and also in the library and included three modifications which differed from the original version. First, the students actively participated in creating the class rules. Second, all rules were stated in a positive way, directing students in what the desired behaviors were, instead of telling what not to do. Third, teams earned points when a member of the team was demonstrating rule following behavior. Following baseline phase, researchers implemented an Intervention A phase, an Intervention B phase, and then an Intervention A phase again. During Intervention A phases, rewards were given to the winning team(s) and in the Intervention B phase, no rewards were given to the winning team.

During baseline, task relevant behavior averaged 73% of intervals observed; off-task behavior averaged 9%, while disruptive behavior averaged 18%. During the Intervention A phase (GBG with rewards), researchers observed an average increase of 21% over baseline in task relevant behavior, a 6% average decrease in off-task behavior in comparison to baseline, and an average 16% decrease in disruptive behavior. No further numerical data were presented, however the authors report that when the Intervention B phase (GBG without rewards) was introduced, target behaviors trended toward baseline levels, and that during the second Intervention A phase, relevant behavior increased again, while disruptive and off-task behavior declined as in the first Intervention A phase.

Swain, Allard, and Holburn (1982) utilized the GBG to improve tooth brushing behavior in twenty-two first grade students and twenty-three second grade students. Following a dental wellness examination, each child received a kit of dental supplies. Then, using the Simplified Oral Hygiene Index the cleanliness of the children's teeth

were assessed, before they were educated about oral hygiene and divided into teams. It was explained, at that time that the children would be participating in a game and competing to be the team with the cleanest teeth. Each day, four children from each team were randomly chosen to have their teeth assessed and rated. Better scores on the Simplified Oral Hygiene Index were praised, but all children received verbal feedback about how to improve dental care daily. Since lower scores indicated better oral hygiene, the team with the lowest score was announced as the winner. Members of the winning team(s) would be placed on a special poster and also received a sticker. The researchers used an A/B design with a follow up phase which occurred nine months after the study was terminated. During the intervention phase, ratings of oral hygiene were improved for children in both classrooms and during the follow up phase, ratings of oral hygiene were still comparable with those of the intervention phase.

In a 1984 study, Darveux sought to analyze the effects of the GBG on academic behavior by adding a merit component (GBG+M) to the original GBG. Darveux (1984) hypothesized that the addition of a merit component would address concerns in the GBG including the following: 1) the teacher is required to monitor undesirable behavior solely, which may reinforce attention-maintained problem behavior, 2) the teacher's attention is focused on inappropriate behavior and so potentially all other behaviors, including desirable behaviors such as class participation, may decline thereby decreasing motivation toward learning, and 3) the focus in the original GBG is on inappropriate behaviors and may lack a mechanism toward motivating appropriate behaviors.

Participants of the study were two second grade students, each with a history of behavior problems in class and, reportedly, completed less than 50% of class work daily.

Their class of 24 students was divided in half, and a target student was assigned to each team. Similar to the original GBG, the teacher was asked to assign a mark to a team each time a team member violated the classroom rules, and teams with the lowest amount of points, or who managed to stay below a predetermined criterion would win. However, what was added in this study, was that students could earn merits when students completed assignments at 75% accuracy, and when they actively participated in the classroom. For every five merits that a team earned, a point would be erased. Thus, when students received a point for a violation of the rules, they could make up for it by demonstrating academic engagement.

The authors employed an A/B/A/B withdrawal design and the dependent variable was classified as disruptive behavior, which included talking-out behavior, out-of-seat behavior, excessive movement while seated, and tattling on other students. Results for the target students indicated that during the baseline phase, the mean percentage of intervals observed for disruptive behavior was 72%, 12% during the initial intervention phase, 84% during the withdrawal phase, and 6% during the final intervention phase. Improved assignment completion was also noted for both target students. During baseline and the withdrawal phases, authors reported the average assignment completion rate was 40%. During the intervention phases, the average percentage of work completed was 75%.

Swiezy, Matson and Box (1992) also published a modified version of the GBG in which desired behaviors were awarded. However, in their version, disruptive behaviors were ignored entirely. They utilized a multiple baseline design with a changing criterion component to evaluate the effectiveness of the GBG across the two pairs of students and

the two therapists facilitating the GBG. Participants were four students of a church-affiliated preschool who were grouped into two pairs for the study. Two graduate students were the facilitators of the GBG, which was played during certain periods each week. When the GBG was played, the preschool students would be prompted by a puppet named "Buddy Bear" to complete tasks cooperatively. If the pair successfully complied, they would earn a dinosaur sticker. If the pair of students concurrently fulfilled 10 tasks, or if they surpassed the predetermined criterion by 150% or more, they would earn bonus points and additional rewards. Improvements in compliance were observed for both pairs of students. For Dyad A, during baseline, they exhibited compliant behavior for 12% of intervals observed, on average, while Dyad B demonstrated 27% compliance. During the GBG phase, both dyads made marked improvements; Dyad A exhibited compliant behavior for 75% of intervals observed, on average, and 77% for Dyad B.

Wright and McCurdy sought to compare two ways of playing the GBG, in their 2011 study in which the participants were the students and teachers of a fourth grade classroom and a kindergarten classroom. In their experiment, Wright and McCurdy used a multi-phase experimental design, which incorporated withdrawal phases, to compare the original version of the GBG (Barrish et al., 1969), with a positive variation called the Caught Being Good Game (CBGG), in which the teacher was asked to scan the classroom on a variable interval schedule, and assign points to teams if all members were on task. Targeted disruptive behaviors included: callouts, talking to others, out-of-seat behavior, bending (e.g. when students would pick up a pencil, or bend to look in their back packs), physical contact with another student, drawing or writing (e.g., unrelated to

the academic task at hand), and playing with objects. A secondary dependent measure was on-task behavior, for which data were collected simultaneously with disruptive behavior for 20 minutes per day in each classroom using a combination of momentary time sampling and partial interval recording methods.

During baseline, the kindergarten classroom exhibited variable levels of on-task behaviors (M = 70%) and disruptive behavior (M = 50%). Upon implementation of the GBG, an immediate decrease in disruptive behavior (M = 27%) and an increase in on-task behavior (M = 88%) were observed. As the GBG was withdrawn, disruptive behavior and on-task behavior returned to levels comparable to baseline (M = 51% and M = 66%, respectively). After the withdrawal phase, the CBGG was introduced to the classroom, which resulted in a decline in disruptive behavior (M = 28%). On-task behavior increased in this phase (M = 78%), however the authors noted that during the GBG phase, the level for on-task behavior was higher.

In the fourth grade classroom, on-task behavior was observed during an average of 74% of intervals, while disruptive behavior was observed during an average of 30%, during baseline. Following baseline, the CBGG was implemented, and an immediate increase in on-task behavior (M = 95%) was observed, as well as an immediate decrease in disruptive behavior (M = 12%). Treatment effects were maintained through the phase and followed by a withdrawal phase in which disruptive behavior increased to an average of 36% of intervals observed, while on-task behavior declined to an average of 78% of intervals observed. After withdrawal, the GBG was introduced, and the on-task behavior increased to an average of 87% of intervals observed, while disruptive behavior increased

to an average of 14%, which authors noted was not as high as the first intervention phase in which the CBGG was played.

In 2013, Leflot, van Lier, Onghena, and Colpin sought to examine whether the levels of on-task behavior at baseline for students acted as a moderator of the effect of the GBG. They also wanted to investigate the processes through which children with low rates of on-task behavior showed reductions in aggression after being exposed to the GBG. Participants were teachers and students of 15 schools in Belgium. Students were tracked from the start of the second grade until the end of third grade. Each school had two classrooms that participated. One classroom served as an experimental group, where the GBG would be played, and one classroom served as the control group, where the GBG would not be played, for a total of 30 classrooms.

Data were collected prior to intervention at the beginning of the second grade, at the end of the second grade, at the beginning of the third grade and at the end of the third grade. Dependent variables included: on-task behavior, aggression, peer rejection, and intervention status. Results indicated that the GBG effect on aggression was initially low, but after 2 years of exposure to the GBG, the on-task behavior of children exhibiting high levels of aggression resembled that of children with moderate/high levels of on-task behavior. Further, the authors reported that results of their mediation model indicated that the pathway through which the GBG reduced levels of aggression among students who were initially low on-task, was the improved relations with their mainstream peers.

In an unpublished thesis, Lynne (2014) investigated a positive variation of the GBG in a general education high school setting. The participants were students and teachers of three general education high school classrooms. An A/B/A/B withdrawal

design was used to analyze the effectiveness of the intervention on the primary dependent variable, which was disruptive behavior, while a second dependent variable was appropriately engaged behavior (AEB). Three behaviors were classified as disruptive behavior in this study- talking-out behavior, out-of-seat behavior, and playing with objects. AEB was defined as the student's eyes oriented toward the teacher or toward a relevant task or activity. When the positive variation of the GBG was introduced to classrooms, the teacher was asked to review the following three classroom rules to the class: (1) raise your hand for permission to speak, (2) remain on task during the assigned activity time, (3) stay in your seat unless given permission to do otherwise. After giving examples and non-examples of each rule, the teacher divided the class into teams and explained that if all students of a team were observed following the rules, then they would earn a point. All minor rule violations were ignored by the teacher.

During baseline, Classroom A exhibited an average of 27% of disruptive behavior, and during the initial intervention phase, disruptive behavior declined to an average of 10%. When the GBG was withdrawn disruptive behavior increased to an average of 20%, and during the final GBG phase, disruptive behavior decreased again to a mean of 11% of intervals observed. Similar results were observed in Classroom B (Baseline, M = 39%; GBG, M = 23%; Withdrawal, M = 38%; GBG, M = 16%) and Classroom C (Baseline, M = 28%; GBG, M = 9%; Withdrawal, M = 30%; GBG, M = 8%). Regarding AEB, Classroom A demonstrated a mean of 60% AEB across the baseline phase, and during the first GBG phase, AEB increased to 80%. During the withdrawal phase, AEB declined to 58% and was restored to an average of 88% during the final GBG phase. Treatment effects on AEB were evident in Classroom B (Baseline,

M = 44%; GBG, *M* = 68%; Withdrawal, *M* = 33%; GBG, *M* = 70%) and Classroom C (Baseline, *M* = 65%; GBG, *M* = 82%; Withdrawal, *M* = 55%; GBG, *M* = 84%), as well.

Effect of the Good Behavior Game on Teacher Behavior

The behavior of a teacher is one of the primary factors in determining the kind of learning environment that students will experience (Fagot, 1973; Skinner & Belmont, 1993; Stronge, Ward, & Grant, 2011). More specifically, research supports the use of praise delivery as a means of mitigating problem behavior in classrooms (Duchaine, Jolivette, & Fredrick, 2011; Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008). The GBG involves student-teacher interactions, such that the teacher is asked to provide immediate feedback about student behavior in the form of assigning tally marks to teams. There is potential within and around these interactions for a teacher to modify their behavior in a number of ways, ideally a teacher would increase their rate of praise. However, there had been virtually no research on the mechanism of teacher behavior within the GBG, until Lannie and McCurdy (2007) examined the impact of the GBG on teacher and student behavior.

The study took place in a first grade classroom with twenty-two first grade students. An A/B/A/B withdrawal design was employed to investigate the effects of the GBG. Dependent variables included on-task behavior, disruptive behavior, and teacher response statements. On-task behavior was defined as the student attending to assigned task or teacher. Disruptive behavior was defined as any behavior not included in the on-task category. Teacher responses were classified into three categories: (1) positive or praise statements, (2) neutral statements or those without a positive or negative meanings, and (3) negative statements, which were defined as a warning or negative response to a

student's behavior. During baseline, on-task behavior occurred during 53% of intervals observed, on average, while disruptive behavior was observed during an average of 37% of intervals. The effect of the GBG was evident during the final GBG phase as on-task behavior occurred for an average of 76% of intervals observed, and disruptive behavior, for an average of 25% of intervals. Conversely, implementation of the GBG did not increase the amount of praise or positive statements from the teacher.

However, other studies have found that the implementation of the GBG can affect teacher behavior. Tanol, Johnson, McComas, and Cote (2010) included a teacher praise component as a part of their investigation of the differential effects and acceptability of two variations of the GBG. The participants were the students of two kindergarten classrooms, including six target students, and their teachers. Both classrooms developed the same two classroom rules for the GBG, (1) Stay in assigned space and do not leave it without permission, and (2) pay attention to the assigned activity. Data were collected on the amount of rule violating behavior occurring across classrooms with the use of an A/B/A/C/B/C withdrawal design, with the latter three phases intended to compare the two variations of the GBG. Additionally, conditional probabilities for teacher responses, classified as praise, and response to rule violations, were calculated to determine whether teachers were delivering these responses appropriately.

In the first variation, GBG-Response Cost, all teams were assigned a poster on which there were four stars per team. When any rule violation occurred, the teacher would explain that a rule had been violated and would take away one of the teams' stars. Additionally, the teachers were asked to praise another team that was following the rules each time a rule violation occurred. At the conclusion of the GBG period (10 minutes in

duration), teams with one or more stars remaining would earn a small edible reward. If any team won the GBG for two days per week or more, they would earn a pencil, eraser or winner's medal.

In the second variation, GBG-Reinforcement, each team was assigned a poster with a blank space under the team's name. As the GBG was played, the teacher was asked to praise students and post stars for teams in which all members were following the rules. The teacher was also asked to ignore all rule violations. At the end of the 10 minute period, any team with at least 3 stars would earn a small edible reward, and similarly to the GBG-Response Cost condition, if any team won for two or more days within a week, they would win a small tangible reward.

Percentages of intervals observed were not reported for all phases, however the authors stated that, for Classroom 1, rule violations occurred for approximately 50% of intervals observed during baseline on average. GBG-Response Cost was introduced first in the classroom, and resulted in an immediate decrease in rule violations, to approximately 30% which continued to decrease across the phase. After three sessions in the withdrawal phase, GBG-Reinforcement was introduced and rule violations decreased to 25% of intervals observed, and continued to decrease through the phase. When GBG-Response Cost was reintroduced, rule violations increased to approximately 35% of intervals observed on average across the phase. Finally, GBG-Reinforcement was reinstated and a downward trend in rule violations was observed throughout the phase.

For Classroom 2, baseline rule violations were occurring for approximately 50% of intervals observed. GBG-Reinforcement was introduced first in the classroom, as conditions were counterbalanced across classrooms (GBG-Response Cost was

implemented first in Classroom 1) and rule violations decreased immediately to approximately 15% of intervals observed for the entire phase. In the withdrawal phase, rule violations returned to levels similar to baseline levels. Next, GBG-Response Cost was introduced and rule violations declined to approximately 25% on average throughout the phase. When GBG-Reinforcement was reinstated, rule violations dropped slightly again. Finally, as GBG-Response Cost was implemented a second time rule violations increased immediately from 15% to 39%.

Tanol and colleagues (2010) reported that, overall, both procedures were successful in decreasing rule violations, but it appeared that GBG-Reinforcement may have been slightly more effective. Similar results were apparent in the target students. However, the authors stated that because of the high overlap between data points in both GBG conditions, that the results should be considered with caution. Further, teachers rated both procedures as acceptable, but when asked which they preferred, they indicated that the GBG-Reinforcement version of the game cultivated a more positive environment in their classrooms. In both versions of the GBG, teachers were asked to deliver praise, however conditional probabilities analyses revealed that teachers delivered more praise under the GBG-Reinforcement condition. Teachers were asked to deliver praise and to terminate responses to rule violations. These modifications were discussed as likely factors in what contributed to teachers reporting a "more positive environment" (Tanol, et al., 2010, p.352) under the GBG-Reinforcement condition.

In another study that highlighted the impact of the GBG on teacher behavior, Leflot and colleagues (2010) investigated the use of an adaptation of the GBG in which teachers provide each team with a set number of cards each day. The teacher removes

one card from a team when a member of that team violates the rules. If at least one card remains at the end of the session, the team is rewarded. Participants in this study were 30 second-grade classrooms spread across fifteen schools. Half the students and teachers were assigned to the experimental group and exposed to the GBG, the other half were the assigned to the control condition and were not exposed to the GBG. The behavior of students and teachers were tracked for two years (e.g., the students' second-grade and third-grade years). At the end of the third grade year, children who were exposed to the GBG demonstrated more on-task behavior and exhibited less talking-out behavior. Regarding teachers, after one year of exposure, the second grade teachers who were exposed to the GBG delivered significantly less negative statements and slightly significant levels of more praise statements than the control group teachers. At the end of the second intervention year (e.g., the students' third grade year), the third grade teachers who had been facilitating the GBG over the course of the year delivered significantly more praise statements, however, they did not deliver significantly less negative remarks when compared to third grade teachers in the control condition.

Elswick and Casey also focused on teacher behavior in their GBG study published in 2011. They sought to examine the reciprocal effect that an increase in appropriate student behavior could have on the behavior of the teacher. Participants were twenty students and one general education teacher of a first grade classroom. Target student behaviors were talking out, out of seat behavior and disrespectful behaviors. Target teacher behaviors included BSP and disapproval statements. An A/B design was employed to evaluate the effect of the intervention.

During the intervention, the teacher was asked to explain the rules of the class and the rules of the game which were as follows: the students in this variation of the GBG played as one whole team versus the teacher. The game was played for thirty minutes each afternoon, and both the class and teacher both began with zero points. For each rule infraction, one point was added to the teacher's score. However, the class could earn points by demonstrating appropriate behavior. At the end of each day, the teacher would document which "team" had won, either the class or the teacher. The winner at the end of the week would win a reward.

During baseline, the frequency of teacher BSP statements occurred on average, 3.5 times (range = 1 – 9) during the 30 minute observation. The frequency of disapproval statements occurred on average, 13.2 times (range = 6-16) during the 30 minute observation. During the GBG phase, the frequency of behavior specific statements increased to an average of 7.85 times (range = 4 – 10) while disapproval statements decreased to an average of 1.5 times (range = 0 – 3). Additionally, regarding class wide behavior, all of the target behaviors for students were found to decrease after implementation of the GBG.

Using Technology to Address Classroom Behavior

In addition to changing the paradigm of behavioral management from a reactive, zero-tolerance approach to a proactive, preventative approach, schools are also making the shift to becoming more technologically interactive. Integrating technology into the classroom environment is encouraged to promote positive student outcomes (Keengwe & Onchwari, 2009; Means, 2010). In the National Association of School Psychologist's Best Practices (Pfohl, & Pfohl, 2002), the statement on technology reads, "the internet is

a tool to help enhance a school psychologist's knowledge base and to provide better services" (Pfohl, & Pfohl, 2002, p.197).

Much of the focus regarding technology in the classroom is centered on teaching academic skills such as math and language, however instruction also encompasses teaching students how to behave and interact appropriately. In 2006, Christ and Christ examined the impact of an interdependent group contingency in high school classrooms. To facilitate this contingency, they used a Digital Scoreboard. The contingency was in place for 30 minutes of the 48 minute class period. For each 2 minutes that the class was not engaged in disruptive behavior, they were awarded a point on the Digital Scoreboard. Once they reached a predetermined criterion of 17 points, instruction ended and they could have free time for the remainder of the class period. A concurrent multiple baseline with withdrawal phases was used to examine the intervention's effectiveness. Dependent variables included disruptive verbalization, teacher corrections of disruptive behavior, teacher directed instruction, and academic engaged behavior. During intervention phases, disruptive verbalizations and teacher corrections of disruptive behavior were reduced, and teacher directed instruction and academic engaged behavior increased. The intervention with the use of the Digital Scoreboard as an automated feedback device was also found to have higher ratings of teacher acceptability.

A similar automated feedback tool is a software program called ClassDojo. ClassDojo (http://www.classdojo.com) is a computer-based program designed to be used in classrooms to assist teachers in tracking student behavior and to provide immediate feedback to the student through the animation and sounds embedded in the program. ClassDojo is displayed through classroom's interactive whiteboard, projector, or on the

teacher's computer. In the ClassDojo program, each student or team is assigned an avatar (Appendix A) and the teacher is able to click on an avatar to award points for appropriate behavior, or to take away points for inappropriate behavior. Additionally, the program gives the teacher the ability to collect and save behavioral data, for each student or for the class, in order to keep track of behavior over the course of a period of time. Further, the teacher can report that information to parents when in a face-to-face meeting, or the teacher may invite parents to check their child's Class Dojo behavioral ratings each day, remotely, via the program's digital interface.

Despite the wide spread availability of ClassDojo, limited research has evaluated its utility in modifying student and teacher behavior. One study (Maclean-Blevins & Muilenburg, 2013) examined the effects of ClassDojo on student self-regulation. Participants in the study were 23 students of a third grade general education classroom in a public elementary school. The teacher used ClassDojo only to reward self-regulatory learning behaviors or "positive learning behaviors", (Maclean-Blevins & Muilenburg, 2013, p.3) which were a collection of behaviors determined during collaboratively with the students. Positive learning behaviors included: working quietly, focusing on work, using classroom resources, double checking work, asking questions and carefully reading directions. Two observers collected data on the students' behavior using 30-minute observations in which they observed a group of 4 students at a time for 1 minute and recorded the presence of target behaviors using an event recording method, then rotated through 6 groups of students. The observers were responsible for tallying how many instances of "negative behavior" (Maclean-Blevins & Muilenburg, 2013, p.4) they observed, as well as a frequency count of the positive behaviors they observed during

independent seatwork tasks before ClassDojo was implemented, and after three weeks of ClassDojo use. Pre- and post- ClassDojo data on student behavior were compared to analyze treatment effects on positive learning behaviors.

The percent change in mean frequency was reported for each of the positive learning behaviors, and "negative behaviors" (Maclean-Blevins & Muilenburg, 2013, p.4) which included talking to another student, disruptive behavior, not focusing on work, and standing up and approaching the teacher with a question. A zero percent change in mean frequency was noted for "Interacting with directions" (Maclean-Blevins & Muilenburg, 2013, p.4) and there were small percentage increases for "Working quietly" (*M* = 7%) (Maclean-Blevins & Muilenburg, 2013, p.4) and "Focusing on work" (*M* = 7%) (Maclean-Blevins & Muilenburg, 2013, p.4), "Raised hands to ask a question" (Maclean-Blevins & Muilenburg, 2013, p.4) saw a reasonable increase at 44%, while "Double-check work" (Maclean-Blevins & Muilenburg, 2013, p.4) and "Using classroom resources" (Maclean-Blevins & Muilenburg, 2013, p.4) saw the greatest increases at 91% and 71%, respectively. Regarding negative behaviors, "Talking to another student" (Maclean-Blevins & Muilenburg, 2013, p.4) decreased 74% in mean frequency, "Disruptive behavior" (Maclean-Blevins & Muilenburg, 2013, p.4) decreased 100%, "Not focusing on work" (Maclean-Blevins & Muilenburg, 2013, p.4) decreased 31%, and "Stood up and approached teacher with question" (Maclean-Blevins & Muilenburg, 2013, p.4) decreased 45%.

ClassDojo was also used in a study (Johnson, 2012) that investigated the use of Student Response Systems (SRS) on the on-task and off-task behavior of students. The study took place in a multi-grade (7^{th} and 8^{th}) self-contained classroom with 5 students,

all identified as having behavior problems; behavior goals were included in all of their IEPs. For language arts and math periods, the teacher would give each student an SRS, which allows students, which allows students to use a remote device to select answers to questions that the teacher projects on an interactive whiteboard. While students worked on the daily task, the teacher used ClassDojo to track on-task and off-task behavior. After each session, each student would be given a print out of their individual ClassDojo data for that day.

An A/B/A/B design was used to evaluate the impact of the SRS on the behavior of the students. ClassDojo data was represented graphically for each student. Although it is unknown how often the teacher rated student behavior, or if there were operational definitions of on-task or off-task behavior, the researcher noted overall increases in teacher ratings of on-task behavior when students used the SRS devices. It should also be noted that there were no interobserver agreement, nor treatment integrity data reported in this study.

Purpose of the Present Investigation

Previous GBG studies have demonstrated its effectiveness in decreasing problem behavior and increasing desirable behaviors in a wide variety of settings (Tingstrom, Sterling-Turner, & Wilczynski, 2006). Darveaux (1984) focused on the application of the original version of the GBG with addition of a components directed toward positive behavior, while others have compared positive variations of the GBG with the original version by implementing both variations in classrooms (Tanol et al., 2010; Wright & McCurdy, 2011). Additionally, a number of studies have examined the effectiveness of a positive variation of the GBG (Darch & Thorpe, 1977; Fishbein & Wasik, 1981;

Robertshaw & Hiebert, 1973; Swiezy et al., 1992). This study adds to the literature base by examining the impact of a positive variation of the GBG with ClassDojo on student behavior (e.g., disruptive and academically engaged behavior), teacher behavior (e.g., teacher praise statements), and also by assessing the acceptability of the GBG when delivered via ClassDojo. The following research questions were examined:

1. Will implementing a positive variation of the GBG with the use of ClassDojo decrease class-wide disruptive behavior across different elementary school general education settings?
2. Will implementing a positive variation of the GBG with the use of ClassDojo increase class-wide academic engagement behavior across different elementary school general education settings?
3. Will implementing a positive variation of the GBG with the use of ClassDojo increase the frequency of praise statements delivered by the classroom teacher?
4. Will teachers rate this positive variation of the GBG with the use of ClassDojo as socially valid?

CHAPTER II - METHODOLOGY

Participants and Setting

Before the study commenced, approval from the University of Southern Mississippi Institutional Review Board was obtained (Appendix B). The study took place in a K-8 primary school located in a rural town in a southern state with a population of 48% female students, 52% male students, 91% white students, 6% black students, and 2% of students identified with two or more races; 62% of students qualified for free or reduced lunch. The school had been implementing PBS for approximately 9 years. Additionally, the School-Wide Evaluation tool (SET) was administered yearly. The SET is an assessment tool used to measure school-wide implementation of positive behavior supports (Horner et al., 2004) scores can range from 0-100, with higher scores indicating higher fidelity in the implementation of PBS components. The school in this study scored a 98 on the most recent administration of the SET.

Three classrooms were identified by administrative referral as classrooms exhibiting problematic behavior. Teacher consent (Appendix C) for each classroom was obtained prior to conducting screening observations. After consent was obtained, a consultation process was initiated. The primary experimenter served as the consultant for all classrooms. Consultation began with asking teachers to identify problem behaviors that were most frequently occurring in their classrooms. Then, in collaboration with the primary researcher, the teacher operationally defined the identified behaviors for observation. All teachers served as participants and were responsible for administering all components of the GBG. Prior to data collection, this research project was reviewed

and approved by a university-based Human Subjects Protection Review Committee (Appendix B).

Classroom A was a fourth-grade general education classroom with 27 students who were reported as white and consisted of 10 female and 17 male students. Ten students were reported as receiving special education services through an individual education plan and identified with mild disabilities (e.g., Specific Learning Disability, Other Health Impaired-Attention Deficit Hyperactivity Disorder, Speech-Language Impairment). Classroom B was a first-grade general education classroom with 19 students of which 18 students were reported as white and 1 reported as black. Further, the class consisted of 11 female and 8 male students, and 3 students reported as receiving services through an IEP. Two of those students were reported as having IEP rulings consistent with mild disabilities as described above, and one student was diagnosed with an autism spectrum disorder. In Classroom C, a fourth-grade general education classroom, there were 19 students of which 11 female and 8 male students. One student was reported as black, one student was reported as Hispanic, and 17 students were reported as white. There were no students reported as receiving special education services in Classroom C.

The teacher of Classroom A reported to be a white female with 2 years of teaching experience and a Bachelor's degree. She had no previous experience with the Good Behavior Game, or with Class Dojo. The teacher of Classroom B reported being a white female with 12 years of teaching experience and a Master's degree. She had no previous experience with neither the Good Behavior Game, or with ClassDojo. The teacher of Classroom C reported being a white female with 1 year of teaching experience

and a Bachelor's degree. She had no previous experience with either ClassDojo or the Good Behavior Game.

Materials

Materials used in the intervention included the following: a script, slips of paper, a jar or other solid container and any tangible rewards approved by the teacher, a SMART/Promethean, or other such interactive whiteboard or projector system, and a computer equipped with the ClassDojo program. The script was used by the teacher to describe the procedures of the GBG to students. Slips of paper indicating the names of each reward were stored and randomly chosen from a jar or container each time a team or teams reach the pre-determined criterion. During the intervention phases, teachers used an interactive whiteboard and computer with access to the ClassDojo program to indicate team names and to keep track of points earned for each team.

As this project was executed in a school with PBS in place, there was a Tier I reward system in place in which students regularly received tickets from teachers and administrators for exhibiting desirable behavior. The tickets could be exchanged for a variety of small tangible rewards from the school's PBS store at least once per week. These tickets were offered as a reward option in each class. In Classroom A and Classroom C, other rewards included small tangibles or candy. In Classroom B, other rewards included small tangibles, marks on a chart indicating progress toward a class party, or the winning team was allowed to change their ClassDojo avatar.

Dependent Variables

Disruptive and Academic Engagement Behavior

Behavior observed during classroom observations was coded on the observation sheet (Appendix E), and based on operational definitions of disruptive and academically engaged behavior (AEB) as described in consultation meetings with teachers. Target disruptive behaviors selected for Classroom A were as follows:

- Head down was defined as and part of student's head making contact with the desk.
- Playing with objects was defined as any manipulation of items not related to the task.
- Out-of-seat behavior was defined as the student's buttocks breaking contact with their seat.

Target disruptive behaviors selected for Classroom B and Classroom C included playing with objects and out-of-seat behavior as defined above, and also included:

- Inappropriate vocalizations, defined as any verbalization made by a student without the permission of the teacher.

In addition, for each classroom a secondary dependent variable was academically engaged behavior (AEB), defined as the student's eyes oriented toward the teacher or toward a relevant task or activity (Skinner, Pappas, & Davis, 2005).

Teacher Praise

In addition, during each phase of the study, data were collected on the frequency of teacher praise statements. Teacher praise fell under two categories: general praise and BSP, and were coded accordingly on the observation sheet. General praise statements

included any positive feedback directed toward a student, or group of students (i.e., "Good job!"). BSP was defined as positive feedback directed toward a student or group of students that indicates a specific appropriate behavior (i.e., "Way to go getting started on your work right away!"). During observation sessions, the observer(s) listened to the teacher's dialogue and coded any occurrence of general praise statements or BSP in the allotted area of the observation sheet (Appendix E). Teacher praise and student behavior were coded simultaneously by the observer(s).

Social Validity

The social validity of the GBG with the use of ClassDojo was evaluated using the Behavior Intervention Rating Scale (BIRS; Von Brock & Elliott, 1987), which was administered to teachers upon completion of data collection. The BIRS is a 24-item instrument designed to measure the acceptability of interventions as well as the perception of that intervention's effectiveness. The questionnaire (Appendix F) consists of Likert-type items (1=strongly disagree to 6=strongly agree), with higher scores indicating greater acceptability. The scale consists of three factors: (1) Acceptability, (2) Effectiveness, and (3) Time of Effectiveness. Reliability and validity of the BIRS have been demonstrated with an alpha coefficient of .97 estimated for internal consistency reliability and coefficients of .97, .92, and .87 reported for Acceptability, Effectiveness and Time of Effectiveness, respectively (Elliott & Von Brock Treuting, 1991).

Data Collection

Trained graduate students conducted all observations. Each observation was conducted using a momentary time sampling procedure. Observations were 20 minutes long, and were segmented into 10-second intervals for a total of six intervals per minute

(Appendix E). An audio recording on an MP3 device audible only to those collecting observation data was used to signal to observers to proceed to subsequent intervals. A different student was observed, as each interval passed, until all of the students in the classroom had been observed. Observers continued to rotate through students in the classroom until the 20-minute observation period had elapsed.

Observation data were collected for disruptive behavior and appropriate behavior concurrently, and if at any time a behavior was exhibited by a student which was not clearly disruptive or appropriate, the student's behavior was coded as disruptive to maintain a liberal estimate of disruptive behavior in the findings of this study. The total percentage of intervals coded as disruptive behavior were represented graphically, and appropriate behavior was graphed in the same manner. The observers were also able to hear what the teacher and students were saying as the audio recording was played at a low volume, and in one ear of the observers. When the observers heard the teacher deliver a praise statement of any kind to a student, group of students, or the entire class, a tally mark was made in the corresponding interval of the observation sheet (Appendix E).

Experimental Design and Data Analysis

To analyze the effectiveness of a positive variation of the GBG for decreasing disruptive behavior while increasing AEB and teacher praise statements, an A/B/A/B withdrawal design was employed. Phase changes were made based on disruptive behaviors exclusively, and at least five data points were collected for every phase (Kratochwill et al., 2010). Data were visually analyzed for level, variability and trend. Baseline data were collected until an increasing or stable trend was observed and then the GBG was introduced. The GBG phase remained in place until a clear treatment effect

was observed (i.e., a decreasing trend or lower level of disruptive behavior), then the GBG was withdrawn from the classroom. Data were collected during the withdrawal phase until a stable trend was observed, and then the GBG was implemented again and remained in place until a clear treatment effect was observed.

In addition to visual analysis, Non-overlap of All Pairs (NAP; Parker & Vannest, 2009) and Tau-U (Parker, Vannest, Davis, & Sauber, 2011) were calculated to estimate the effects of the intervention on student behavior and teacher praise statements. NAP is a non-parametric method that is strongly correlated with the R^2 effect size, and is used to indicate overlap between each baseline data point and each intervention data point. NAP scores between 0 and 0.65 are regarded as indicating weak effects, while scores between 0.66 and 0.92 are considered as indicative of moderate effects, and scores between 0.93 and 1.00 are considered as suggestive of strong effects (Parker & Vannest, 2009). Tau-U is considered a suitable non-parametric effect size calculation for small data sets. It is used as a measure of data non-overlap for two phases and although it has no published cutoff scores for indicating strength of effect, NAP cutoff scores were used, considering the comparability between NAP and Tau-U.

Procedures

Screening and baseline

Observations were conducted by graduate students trained in the observation procedure, and observation sessions took place after administrative referral and teacher consent. During these observations, teachers were observed in the classroom with no new contingencies in place. All students were observed using the observation procedure as described previously. Disruptive behavior occurred during an average of at least 30%

of intervals observed during the initial screening observation for a classroom to be included in the study. Observation data collected for screening purposes were retained as baseline data.

Teacher training

After baseline data were collected, teacher training was initiated. The primary investigator conducted all components of the teacher training sessions. Teachers were trained in the implementation of the GBG, which included collaboratively developing a list of classroom rules that were based on the targeted behaviors discussed in the previous consultation session. Training also included a review of the GBG script and each step of the GBG procedure. In addition, the experimenter demonstrated the steps of the GBG and had the teachers practice them during the training session. Teachers were given immediate feedback during the training sessions regarding any errors or omissions of steps in implementation of the GBG.

During the training session, the primary investigator also trained the teachers on how to use ClassDojo. First, the primary investigator assisted the teachers in setting up an account and choosing a template for their classroom, which they used to allow each team to choose a team name, and an avatar to represent their team. Next, the primary investigator assisted the teachers in selecting icons that were used to signal to the class that a team had scored a point. Then, each teacher was told the point criterion needed for a team to win the game and access a reward. The criterion for each class was set by taking the average of the total number of reprimands and praise statements made by the teacher in all baseline observations and dividing that number by the amount of teams present in the classroom. In Classroom A and Classroom B, the criterion was set at 4 and

in Classroom C, the criterion was set at 3. Finally, the teachers were trained on how to use ClassDojo to indicate points for teams in the classroom and were asked to practice in the training session until they felt comfortable using the program on their own.

Class Orientation

The GBG intervention was introduced by the teachers using a script (Appendix D) explaining that the class will have the opportunity to win rewards for exhibiting good behavior. The teachers then divided the class into teams and showed the class the ClassDojo program that was be used to indicate teams and display progress. Classroom A had 4 teams, each with approximately 7 students. Classroom B had 6 teams, each with approximately 3 students. Classroom C had 3 teams, each with approximately 6 students. The teachers allowed the students to choose their team names and avatars, or pictures representing each team.

Next, the teachers explained the classroom rules for the game, which were posted in the classroom during intervention phases. The teachers described and modeled examples and non-examples of each rule. Finally, the teachers told the class the point total needed for a team or teams to win the game and obtain a reward. This predetermined criterion was the average number of reprimands and praise statements (general praise and BSP) delivered during baseline observations for each class. This number was chosen because it ensured that teachers would not have to verbally address behavior any more frequently in intervention phases than in baseline and withdrawal phases.

Intervention

Once the students had been trained in intervention procedures, the teachers began implementation of the intervention. During the intervention, the teachers assigned points to teams in which all members were demonstrating on-task behavior according to the definitions that the teachers created with the primary investigator. All minor rule violations were to be ignored when this treatment condition was in place. At the conclusion of the 20-minute period, the teachers would end the game by announcing the winner and allowing a student from the winning team(s) to draw a slip of paper from a jar or other container, which would determine which reward the team(s) would obtain for that day.

During 3 sessions in the second intervention phase, the teacher of Classroom A allowed her students to choose which reward they wanted after winning instead of choosing randomly. During 2 sessions in the second intervention phase, the teacher of Classroom B allowed her students to choose which reward they wanted after winning instead of choosing randomly. During 3 sessions in the second intervention phase, the teacher of Classroom C allowed her students to choose which reward they wanted after winning instead of choosing randomly. This is indicated in treatment integrity data.

Withdrawal

During the withdrawal phase, GBG rules were removed from the classroom. Teachers were asked not to play the GBG. Additionally, the teacher was asked not to use ClassDojo or any of its components. Observation sessions still took place for 20 minutes at the same time during the school day. Conditions were similar to baseline in each classroom.

Reimplementation

When the GBG was implemented again in each classroom, the primary investigator asked the teachers to post the GBG rules again. Additionally, the primary investigator asked the teacher to use the ClassDojo program to facilitate the GBG upon reintroduction of the GBG.

Interobserver agreement

Graduate psychology students were trained as observers. Behavioral definitions of disruptive behavior and AEB were provided during training. Observers simultaneously observed a classroom with the primary experimenter, and interobserver agreement (IOA) was calculated using methods as stated previously. IOA was expected to remain above 80% for the entire duration of the study.

IOA data were collected for 30% of total sessions, which is consistent with other similar studies (Hunt, 2012; Mitchell, 2012). IOA was calculated by summing the total number of agreements for occurrences and non-occurrences of behavior of both observers and then dividing that number by the total number of intervals and multiplying by 100. IOA for student behavior, combined, averaged 94% (range = 90% - 100%). IOA for AEB averaged 95% (range = 89% - 100%), and IOA for disruptive behavior averaged 94% (range = 89% - 100%).

Additionally, IOA were calculated for the frequency of teacher praise statements by dividing the smaller frequency count over the larger frequency count and dividing by 100. IOA was calculated separately for general praise (M = 83%; range = 0-100%) and BSP (M = 92%; range = 50-100%). Lower percentages are due to very low frequency behavior, for example, if a teacher only delivered one praise statement during a class and

one observer heard it and another did not, then IOA for that session was 0%. Cohen's Kappa was calculated as an additional estimate of IOA (κ = .64, p<.001) with values between 0.40 and 0.75 being considered "fair to good agreement beyond chance" (Banerjee, Capozzoli, McSweeney, & Sinha, 1999, p. 6).

Treatment integrity

A treatment integrity checklist (Appendix G) was used during each observation in which the GBG was in place. The checklist included each component of the GBG as the teacher was trained. Treatment integrity data were collected by the observer(s) collecting observation data in the classroom. Treatment integrity was calculated by dividing the number of steps successfully completed by the number of total items on the checklist and multiplied by 100 to create a percentage. Teachers were expected to complete 80% or more of steps with integrity, or they would have been trained again as previously described. None of the teachers required retraining during the course of the study. However, it was deemed necessary to provide performance feedback to the teacher of Classroom A once in the second intervention phase, which will be discussed in the Results chapter. IOA for treatment integrity data were collected for 38% of total intervention sessions. Observers agreed on treatment integrity 100%.

Procedural integrity

The primary researcher was responsible for conducting all teacher trainings. During trainings, an observer was present and collecting data on procedural integrity of steps followed in training each teacher on the GBG. Using a checklist (Appendix H), the observer indicated which components of the training were completed. All of the

components listed on the procedural integrity checklist for training (100%) were completed, per the observer, before the first intervention phase for each classroom.

CHAPTER III - RESULTS

Student Behavior

On average, students in Classroom A (Figure 1, top panel) exhibited disruptive behavior during 36% of intervals observed (range = 30% - 41%) across baseline observations. Upon introduction of the GBG, disruptive behavior immediately declined during the first intervention observation session (*M* = 11%) and remained at a lower level for three subsequent observations. During these observation sessions, the teacher remained in the classroom and monitored the class while awarding points to teams. However, during the tenth observation session, the teacher began standing at the doorway of the classroom and talking to other teachers; periodically, she would come into the classroom and assign points to teams. Simultaneously, disruptive behavior began increasing, even reaching baseline levels during the eleventh observation session (*M* = 33%). Nonetheless, a decreased average of disruptive behavior was maintained during the intervention phase (*M* = 16%; range = 8% - 33%). It is important to note that during this time, the teacher was still meeting treatment integrity requirements as she was completing 80% or more of the GBG steps on the treatment integrity checklist (Appendix G), therefore she was not required to be retrained.

During the withdrawal phase, disruptive behavior remained stable at a higher level than the intervention phase (*M* = 25%; range = 15% - 33%). Anecdotally, during the withdrawal phase, the observers noted that the teacher was more present in the classroom. As the GBG was introduced for the second intervention phase, the observers noticed that the teacher once again became more removed from the classroom. Although

the teacher was still completing at least 80% of the steps on the treatment integrity checklist, performance feedback was given to the teacher.

During the performance feedback session, the teacher was shown the graph of her students' behavior data and advised that she might consider being more present in the classroom. The teacher stated that she was most surprised at the academic engagement data because she thought that her students' behavior had improved. The investigator advised the teacher that her students seemed to have become very proficient at appearing to be academically engaged when she would come into the classroom, but when she was not present in the classroom, they were less academically engaged. Following the performance feedback session, disruptive behavior continued on a stable and declining trend for the remainder of the second intervention phase (*M* = 12%; range = 8% - 16%). Table 1 displays effect size calculations for disruptive behavior between phases. Overall, the intervention had a strong effect on decreasing disruptive behavior according to weighted NAP calculations, and a moderate effect according to weighted Tau-U calculations.

Classroom B (Figure 1, middle panel) exhibited disruptive behavior for an average of 30% of intervals observed during the baseline phase (range = 29% - 34%). As the GBG was introduced, an immediate decrease in disruptive behavior was observed (*M* = 18%) and maintained through the first intervention phase (*M* = 16%; range = 9% - 21%). When the GBG was withdrawn, an immediate increase in disruptive behavior was observed (*M* = 38%). A variable, and higher level of disruptive behavior was observed during the withdrawal phase (*M* = 30%; range 23% - 41%). During the second intervention phase, disruptive behavior continued along a stable and decreasing trend (*M*

= 15%; range = 10% - 20%). Overall, the intervention had a strong effect on decreasing disruptive behavior according to weighted NAP and Tau-U calculations (Figure 1).

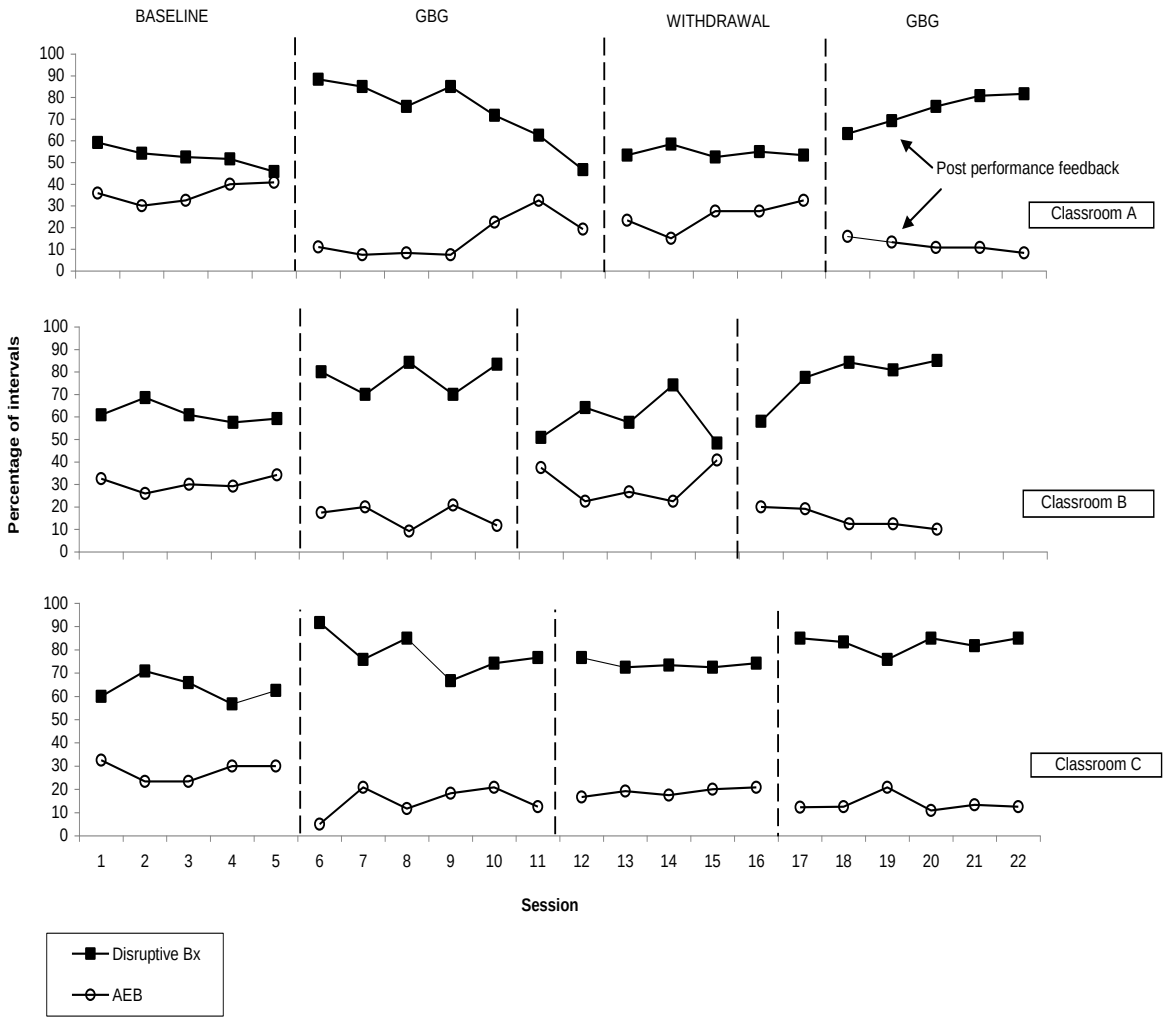

Figure 1. Percentage of intervals for which disruptive behavior and academically engaged behavior occurred for Classroom A (top panel), Classroom B (middle panel) and Classroom C (bottom panel) across baseline, intervention and withdrawal phases.

During the baseline phase for Classroom C (Figure 1, bottom panel), disruptive behavior was observed during an average of 28% of intervals (range = 23% - 33%). Upon introduction of the GBG, an immediate decrease in disruptive behavior was observed (*M* = 5%) and maintained, but decreased level through the phase (*M* = 15%;

range = 5% - 21%). During the withdrawal phase, disruptive behavior was observed at a slightly higher level with an increasing trend (*M* = 19%; range = 17% - 21%) but did not return to baseline levels. As the GBG was introduced again, an immediate decrease in disruptive behavior was observed (*M* = 12%) and a lower level of disruptive behavior was maintained through the phase (*M* = 13%; range = 11% - 21%). According to NAP calculations, there was a strong effect overall, while according to Tau-U calculations, there was a moderate effect (Table 1).

Table 1

Disruptive Behavior Effect Size Calculations for Classrooms A, B, and C.

	NAP	Effect	Tau-U	Effect
Classroom A				
Baseline/Initial GBG	.96	Strong	.69	Moderate
Withdrawal/Reimplementation	.96	Strong	.92	Moderate
Weighted Average	.96	Strong	.92	Moderate
Classroom B				
Baseline/Initial GBG	1.00	Strong	1.00	Strong
Withdrawal/Reimplementation	1.00	Strong	1.00	Strong
Weighted Average	1.00	Strong	1.00	Strong
Classroom C				
Baseline/Initial GBG	1.00	Strong	1.00	Strong
Withdrawal/Reimplementation	.92	Moderate	.63	Weak
Weighted Average	.96	Strong	.82	Moderate

It is noted that there was a weak effect indicated by Tau-U calculations across the withdrawal to reimplementation phases. One reason for this may be that at the end of each intervention session, this teacher asked each group if they could remember what they had earned points for. This self-reflection task could have been instrumental in helping students maintain desired classroom behavior, even after the GBG had been withdrawn. Perhaps this practice produced increased residual effects for this classroom, as compared to the other two classrooms.

Classroom A exhibited an average of 53% AEB across baseline observations (range = 46% - 59%) with a stable and slightly decreasing trend. During the first intervention phase, an immediate increase in AEB was observed (*M* = 88%), however, it continued along a decreasing trend across the phase (*M* = 74%; range = 88% - 47%), which was possibly due to the teacher's lack of presence in the classroom as previously discussed. AEB continued along a stable trend comparable with baseline levels during the withdrawal phase (*M* = 54%; range = 53% - 58%). The teacher was given performance feedback during the second intervention phase and subsequently, improved levels of AEB were observed and maintained while the GBG was in place (*M* = 74%; range = 63% - 82%). Table 2 displays effect size calculations for AEB between phases. Overall, the intervention had a strong effect on increasing AEB according to weighted NAP and a moderate effect according to Tau-U calculations.

AEB for Classroom B was observed during an average of 61% of intervals within the baseline phase (range = 58% - 69%). Upon implementation of the GBG, an immediate increase in AEB was observed (*M* = 80%) and was maintained at a higher level through the phase (*M* = 78%; range = 70% - 83%). As the GBG was withdrawn

from the classroom, an immediate decrease in AEB was observed (*M* = 51%) a lower level of AEB was observed along a variable trend (*M* = 59%; range = 48% - 74%) across the phase. During the second GBG phase, AEB returned to a higher level, which was maintained through the phase (*M* = 77%; range = 58% - 85%). Overall, the intervention had a strong effect on increasing AEB according to weighted NAP calculations, and a moderate effect according to weighted Tau-U calculations (Table 2).

Table 2

AEB Effect Size Calculations for Classrooms A, B, and C

	NAP	Effect	Tau-U	Effect
Classroom A				
Baseline/Initial GBG	.89	Moderate	.77	Moderate
Withdrawal/Reimplementation	1.00	Strong	1.00	Strong
Weighted Average	.94	Strong	.88	Moderate
Classroom B				
Baseline/Initial GBG	1.00	Strong	1.00	Strong
Withdrawal/Reimplementation	.92	Moderate	.84	Moderate
Weighted Average	.96	Strong	.92	Moderate
Classroom C				
Baseline/Initial GBG	.97	Strong	.93	Strong
Withdrawal/Reimplementation	.97	Strong	.93	Strong
Weighted Average	.97	Strong	.93	Strong

Classroom C exhibited AEB during an average of 63% across baseline observations (range = 57% - 71%). During the first intervention phase, there was an immediate increase observed in AEB (M = 92%) and a higher level of AEB was maintained through the phase (M = 78%; range = 67% - 92%). Through the withdrawal phase, AEB was observed at only a slightly lower average than in the first intervention phase (M = 74%; range = 73% - 77%). As the GBG was implemented again, there was an immediate increase in AEB (M = 85%) which was maintained through the phase (M = 83%; range = 76% - 85%). Overall, the intervention had a strong effect on increasing AEB according to both weighted NAP and Tau-U calculations (Table 2).

Teacher Behavior

The teacher of Classroom A (Figure 2) delivered very little general praise (*M* = 0.06), and BSP (*M* = 0.01) statements, on average, per minute during observations sessions in baseline. During the first intervention phase, there were no general praise statements delivered, however a slight increase in the delivery BSP statements per minute was observed (*M* = 0.02). In the withdrawal phase, there were no praise statements delivered to the class during observations. During the second intervention phase, the teacher of Classroom A was shown a graph with student behavior data during the performance feedback session. After the performance feedback session, in which the teacher was asked to be more present in the classroom, there was a change in the amount of praise statements delivered. An increase in the amount of general praise statements (*M* = 0.05; range = 0.00 - 0.10) and BSP statements (*M* = 0.27; range = 0.00 - 0.40) delivered on average per minute, per session was noted. Overall, the intervention had a moderate effect on increasing general praise statements according to weighted NAP and a weak

effect according to Tau-U calculations (Table 3). The intervention had a moderate effect on increasing BSP statements according to weighted NAP and a weak effect according to Tau-U calculations (Table 4).

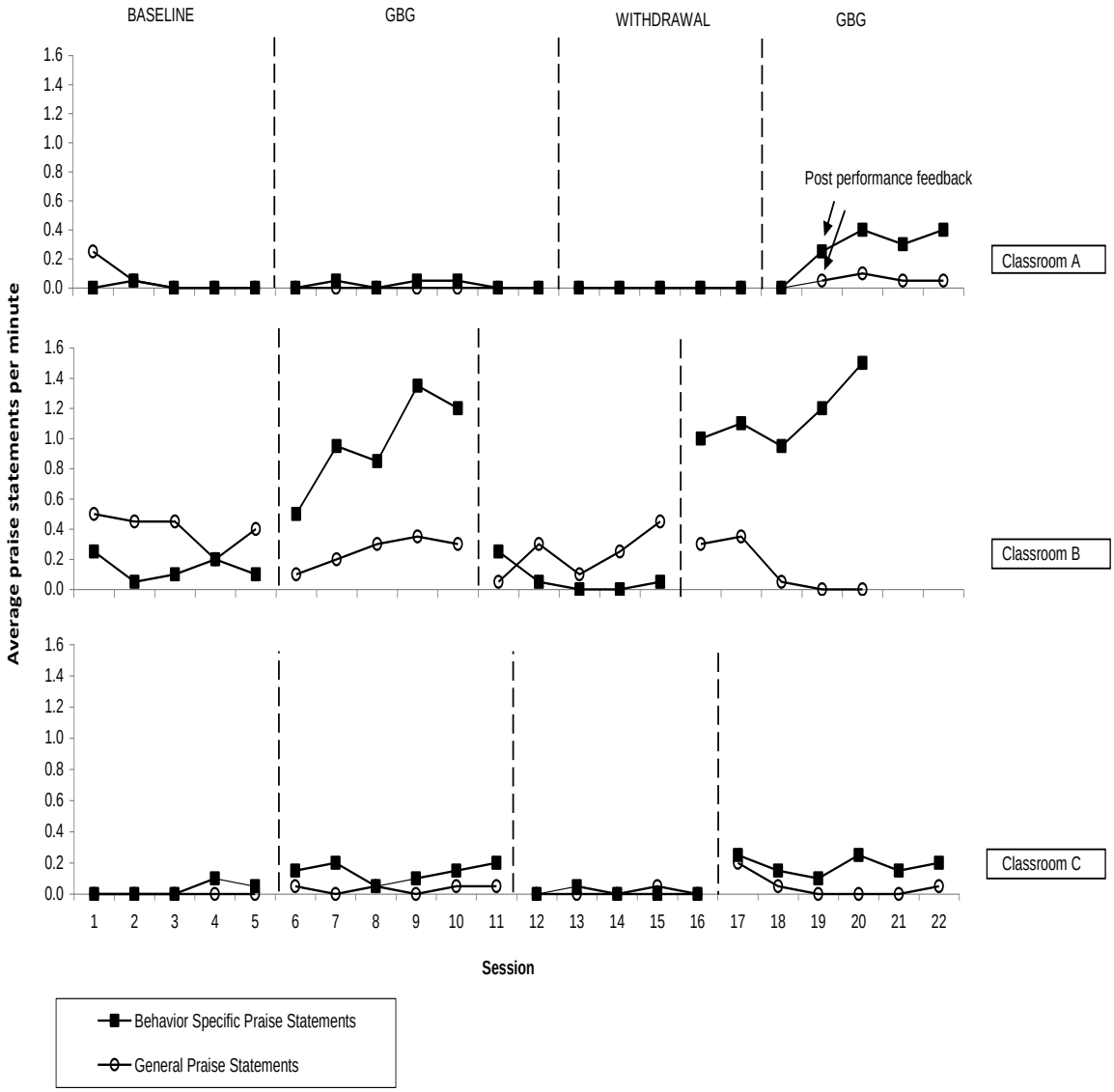

Figure 2. Rate of teacher general and BSP statements per minute for Classrooms A (top panel), B (middle panel), and C (bottom panel) across baseline, intervention and withdrawal phases.

During baseline observations, it was noted that the teacher of Classroom B (Figure 2) was already delivering praise at a relatively high rate. On average, there were .40 general praise statements (range = 0.20 - 0.50), and .14 BSP statements (range = 0.05 - 0.25) delivered per minute, on average. As the GBG was implemented for the first time in the classroom, a decrease in the average amount of general praise statements delivered (*M* = 0.25; range = 0.10 - 0.35) was observed, however the average number of BSP statements delivered increased to an average of 0.97 per minute, per observation session (range = 0.50 – 1.35). During the withdrawal phase, general praise statements remained relatively stable (*M* = 0.23; range = 0.05 - 0.45), while BSP statements decreased (*M* = 0.07; range = 0 - 0.25). Upon reimplementation of the GBG, the average number of general praise statements delivered per session decreased (*M* = 0.14; range = 0 - 0.35), while BSP statements increased (*M* = 1.15; range = 0.95 – 1.5). Overall, the intervention had a weak effect on increasing general praise statements according to both weighted NAP and Tau-U calculations (Table 3). The intervention had a strong effect on increasing BSP statements according to both weighted NAP and Tau-U calculations (Table 4).

In Classroom C (Figure 2), the rate of general praise (M = 0) and BSP (M = 0.03; range = 0 - 0.10) was low during the baseline phase. Increases in general praise statements (M = 0.03; range = 0 - 0.05) and BSP (M = 0.14; range = 0.10 - 0.20) were observed during the first GBG phase. During the withdrawal phase, both general praise (M = 0.01; range = 0 - 0.05) and BSP (M = 0.01; range = 0 - 0.05) returned to levels similar to baseline. However, as the GBG was put back in place, increases in the number of general praise statements (*M* = 0.05; range = 0 - 0.20) and BSP statements (*M* = 0.18;

range = 0.10 - 0.25) delivered per observation session were observed. Overall, the intervention had a moderate effect on increasing general praise statements according to weighted NAP and a weak effect according to Tau-U calculations (Table 3). The intervention had a strong effect on increasing BSP statements according to both weighted NAP and Tau-U calculations (Table 4).

Table 3

General Praise Statements Effect Size Calculations for Classrooms A, B, and C

	NAP	Effect	Tau-U	Effect
Classroom A				
Baseline/Initial GBG	.30	Weak	.40	Weak
Withdrawal/Reimplementation	.83	Moderate	.67	Moderate
Weighted Average	.55	Moderate	.11	Weak
Classroom B				
Baseline/Initial GBG	.32	Weak	.72	Moderate
Withdrawal/Reimplementation	.14	Weak	.36	Weak
Weighted Average	.23	Weak	.54	Weak
Classroom C				
Baseline/Initial GBG	.83	Moderate	.67	Moderate
Withdrawal/Reimplementation	.67	Moderate	.33	Weak
Weighted Average	.75	Moderate	.50	Weak

Table 4

BSP Statements Effect Size Calculations for Classrooms A, B, and C

	NAP	Effect	Tau-U	Effect
Classroom A				
Baseline/Initial GBG	.61	Weak	.23	Weak
Withdrawal/Reimplementation	.83	Moderate	.67	Weak
Weighted Average	.71	Moderate	.44	Weak
Classroom B				
Baseline/Initial GBG	1	Strong	1	Strong
Withdrawal/Reimplementation	1	Strong	1	Strong
Weighted Average	1	Strong	1	Strong
Classroom C				
Baseline/Initial GBG	.93	Strong	.87	Moderate
Withdrawal/Reimplementation	1	Strong	1	Strong
Weighted Average	.97	Strong	.93	Strong

Social Validity

At the conclusion of the study, teachers completed the BIRS (Elliott & Von Brock Treuting, 1991) to assess their acceptability of the GBG intervention with the use of ClassDojo. Each teacher returned their responses without the primary investigator being able to determine which responses belonged to which teacher, ensuring that teachers felt comfortable to answer honestly. Results of the BIRS indicated moderate to high levels of social validity of the intervention. Possible BIRS scores ranged from 1 to 6, with higher

scores indicating a greater level of intervention acceptability. Teachers' overall mean item rating on the Acceptability factor was 5.24 (range = 4.80 – 5.73). On the Effectiveness factor, teachers' overall mean item rating was 4.71 (range = 4.14 – 5.00). Each teacher's average item rating for the Time of Effectiveness factor was 5.00.

CHAPTER IV – DISCUSSION

Established as an effective intervention to use across a variety of settings and age groups (Tingstrom et al., 2006), the GBG has garnered a substantial amount of empirical support. However, there are few studies that investigated a positive variation of the GBG, and there were no known studies that investigated implementing the GBG with the use of a computer-based program. The current study added to the literature base by evaluating the effectiveness of a positive variation of the GBG with ClassDojo and its social validity.

The first and second research questions asked if implementing a positive variation of the GBG with ClassDojo would decrease class wide disruptive behavior, and increase AEB. Across all three classrooms, marked decreases in disruptive behavior were observed and maintained while the GBG was in place. Increases in AEB were also noted for all three classrooms. NAP and Tau-U effect sizes were strong to moderate overall for each classroom and for both disruptive behavior and AEB. This is consistent with previous findings (Tingstrom et al., 2006) regarding the effectiveness of the GBG in decreasing disruptive behavior and increasing AEB. Further, the addition of ClassDojo did not appear to diminish the effectiveness of the GBG, and similar to previous studies, (Johnson, 2012; Maclean-Blevins & Muilenberg, 2013) ClassDojo was found to be an effective way of integrating technology into the classroom setting, although previous studies.

The third research question asked if the implementation of a positive variation of the GBG with ClassDojo would increase the frequency of teacher praise statements. The teacher of Classroom A delivered little-to-no praise statements of any kind, even during

the first GBG phase. However, after one performance feedback session during the second intervention phase, in which she was shown her class' behavior data, her rate of general and behavior specific increased dramatically. The teacher of Classroom B delivered the highest rate of praise of all three teachers across all phases. Most notably though, was that the rate of BSP increased significantly during intervention phases. The teacher of Classroom C delivered considerably low rates of praise during baseline and withdrawal phases. Her praise increased moderately during GBG phases, yet she never delivered more than a total of 9 praise statements during any one observation session. However, there were still clear treatment effects demonstrated with regard to disruptive behavior and particularly AEB. Additionally, this class seemed to sustain more residual effects on disruptive behavior and AEB through the withdrawal phase. This may potentially be due to the teacher adding a component to the GBG in which after the GBG was played, she asked each team, whether they won or not, what they received points for. More research is needed regarding the delivery of teacher praise within the GBG; this study was novel in that the rate of teacher praise statements delivered was tracked across all phases. In this version of the GBG, praise appeared to serve as a mechanism of behavior change, which is consistent with previous findings (Becker, Madsen, & Arnold, 1967; Partin, Robertson, Maggin, Oliver, & Wehby, 2010; Reinke, Lewis-Palmer, & Merrell, 2008; Sutherland, Wehby, & Copeland, 2000) regarding the impact of teacher delivered praise.

The fourth research question asked if teachers would rate the positive variation of the GBG with ClassDojo as socially valid. Mean scores per item were 5.50 for two teachers and 4.88 for another teacher. This indicated a moderate to high level of social

validity for the intervention. Anecdotally, each teacher stated that they would probably continue using the intervention, although there is no follow-up phase in this study, and so this cannot be confirmed. These findings coincide with studies that emphasize the acceptability and social validity of technologically-mediated interventions (Bellini, Akullian, & Hopf, 2007; Christ & Christ, 2006; Cihak, Fahrenkrog, Ayres, & Smith, 2009). Further, a number of additional studies indicate various benefits that technologically-mediated interventions might offer (Goldsmith & LeBlanc, 2004; Spagnolli & Bracken, 2014), which include these interventions' ability to generalize across people and settings, and their ever increasing accessibility in a world where handheld devices with expanding capabilities are progressively becoming integrated into our daily lives.

Implications for Practice

The GBG is an intervention that can be implemented with very little time needed for training teachers; in this study, each teacher was trained within one hour. The addition of ClassDojo seemed to make the intervention even more attractive for teachers, as each liked the idea of incorporating more technology into their instruction. Practitioners may consider however, that some teachers may overestimate the influence of ClassDojo and abandon some of their typical behavior because they believe that the mere presence of ClassDojo is enough to manage classroom behavior. Additional consultation around common behavior management practices, such as, active supervision may be necessary.

For two of the three teacher participants in this study, being trained on, and implementing a positive variation of the GBG with ClassDojo was associated with

increased praise rates, and more specifically, increased rates of BSP. Numerous methods have been used to increase teachers' rate of praise (Armstrong, McNeil, & Van Houten, 1988; Taber, 2014; van der Mars, 1987) and although more research is needed, perhaps training a teacher to implement a class wide intervention which draws attention toward desired behavior may be an additional method to consider.

The GBG does not take much time away from instruction, and rewards for students are low-to-no-cost. The GBG with a positive variation could be considered for schools that have a PBS framework in place, as well as schools that do not. This study took place at a school which had been implementing PBS for approximately 9 years and had obtained a high SET score (98) on the most recent administration of the measure. The emphasis on PBS was evident in the way that teachers used school-wide expectations to frame class rules, often referring to the school-wide expectations (e.g., be safe, be respectful, be responsible) when reviewing each team's performance in the GBG (i.e.,"Team Starfish is doing a great job of staying seated and on-task, they are being respectful and responsible!"). The emphasis on PBS was the most apparent in the way that one of the reward options in each class, which was frequently chosen by students, was the school's PBS school-wide currency, or tickets which could be redeemed for small tangibles at the school's PBS store. These tickets did not cost the teachers anything and there were enough so that even if every team in the classroom won the GBG on a day, then each student could easily be given a ticket. Additionally, giving student's PBS tickets means that each individual student would essentially be able to select a reward of their choice from the PBS store.

Limitations

There are several limitations of this study to be noted. First, this study investigated the GBG in only three classrooms; in consideration of the lack of diversity in this sample it should be noted that results may not generalize to other age groups or settings. Additionally, the GBG was only played for a 20-minute period in each classroom, while the entire class period was approximately 45 minutes long. It is unknown if the effects of the GBG on student and/or teacher behavior generalized for the remainder of the class period. Similarly, it is unknown what the effects of the GBG would have been if played for the entire class period. Another limitation is that there was not a follow-up phase so it is unknown if the teachers decided to continue using the intervention, and if so, which components. It is also unknown if the effects of the GBG continued, in any way, to impact student and/or teacher behavior. Moreover, it was necessary to have a performance feedback session with the teacher of Classroom A, and so a possible limitation may be that the training protocol created for this study was inadequate in teaching how to facilitate the GBG for all teacher participants.

Possibilities for Future Research

There are a number of possibilities for future research. In this study, we examined the effect of the positive variation of the GBG with ClassDojo on teacher praise statements. It is unknown whether the original version of the GBG would have a similar impact on teacher praise. Also, this study was conducted in an elementary school, and in general education classrooms, so future studies might investigate the utility of this intervention in preschool, middle school, or high school settings within general, or special education classrooms. Lastly, previous studies have focused on the impact of

interdependent group contingencies on the behavior of one or more target students (Lambert, 2014; McHugh, 2014) and future studies could investigate these kinds of effects using a positive variation of the GBG with ClassDojo.

APPENDIX A – Class Dojo Screenshot

Figure A1. Screenshot of the ClassDojo program.

Reprinted from fourthgradelemonade.blogspot.com, by C. Delaney, 2012, Retrieved from http://fourthgradelemonade.blogspot.com/2012/09/behavior-management-class-dojo-update.html. Reprinted with permission.

APPENDIX B – IRB Approval Letter

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional.review.board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 14101701
PROJECT TITLE: Implementing a Positivie Variation of the Good Behavior Game with the Use of a Computer-based Program
PROJECT TYPE: New Project
RESEARCHER(S): Shauna Lynne and John Lum
COLLEGE/DIVISION: College of Education and Psychology
DEPARTMENT: Psychology
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 10/27/2014 to 10/26/2015
Lawrence A. Hosman, Ph.D.
Institutional Review Board

APPENDIX C – Teacher Consent Letter

Dear Teacher,

I am a doctoral student in the School Psychology Program at The University of Southern Mississippi working under the guidance of Keith Radley, Ph.D. As part of my dissertation, I am researching the effectiveness of a positive variation of a classroom-based intervention called the Good Behavior Game (GBG). The GBG is a procedure designed to reduce problem behavior in the classroom and your classroom has been referred for class-wide disruptive behavior, so I hope that you will participate.

If you agree to participate in this study, we will ask you to perform several tasks. First, prior to the implementation of the GBG, you will be asked to complete a consultation session with me to obtain information regarding your students' behavioral concerns. Following the consultation, a screening procedure will be conducted to verify your classroom's capacity for participation. If your classroom qualifies for participation, I will conduct a training session to explain and practice the steps of the intervention with you prior to implementation. If the classroom does not qualify for participation, then other services will be made available to you.

Throughout the study, brief classroom observations will be conducted multiple times per week by myself or another trained undergraduate student or trained graduate student from the USM School Psychology program. Following the initial screening observation, data will be collected on targeted disruptive behaviors. Each day, you will be asked to either: 1) conduct class normally without the GBG, 2) implement the GBG. Following each day of observations, you will be provided with brief feedback on game implementation. At the end of the study, you will be asked to complete a questionnaire to assess your satisfaction with the GBG.

Agreeing to participate in this study may offer several benefits for you and your students. By participating in this study you will be trained on the implementation of a new intervention technique that can be used with other students. An additional benefit is the expected decrease in inappropriate behaviors and the increased appropriate behaviors by your students. Students' behavior will be monitored to ensure undesired effects (e.g., increase in inappropriate behaviors) do not happen. Should we observe any unanticipated effects on your students' behavior, modifications or discontinuation of the intervention will occur and your students will be provided with other appropriate services.

There appear to be very few risks for either you or your students participating in this study. The greatest discomfort for you may be related to implementing a new procedure in the classroom. To reduce discomfort, I and/or other trained graduate students will provide training, materials, and will be available to answer any questions you may have. Your students should not experience any discomfort from the implementation of the recommended intervention.

All interviews, observations, and other information obtained during this study will be kept strictly confidential. Your name, students' names, and other identifying information will not be disclosed to any person not connected with this study. Results from this research project may be shared at professional conferences or published in scholarly journals; however, all identifying information will be removed from publications and/or presentations. Your participation in this study is entirely voluntarily.

In addition, you may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Further services, if needed, may be provided outside the scope of this study. Whereas no assurance can be made concerning results that may be obtained (as results from investigational studies cannot be predicted) the researcher will take every precaution consistent with the best scientific practice.

If you agree to participate, please read, sign, and return the following page. Please keep this letter for your records. If you have any questions about this study, please contact Shauna Lynne at (267) 252-7068 or shauna.lynne@eagles.usm.edu or you may contact Dr. Keith Radley at (601) 266-6748 or keith.radley@usm.edu. This project and this consent form have been reviewed by the Human Subjects Protection Review Committee at USM, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the Institutional Review Board Office, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406-5147, (601) 266-6820.

Sincerely,

_____

Shauna Lynne, M.S.Ed.
School Psychologist-in-Training

THIS SECTION TO BE COMPLETED BY TEACHER

Please Read and Sign the Following:

I have read the above documentation and consent to participate in this project. I have had the purpose and procedures of this study explained to me and have had the opportunity to ask questions. I am voluntarily signing this form to participate under the conditions stated. I have also received a copy of this consent. I understand that I will be asked to implement a classroom-based intervention called the Good Behavior Game, and observations will be conducted in the classroom on the students' behavior. In order to do so, I will be required to complete a consultation session, to implement the intervention, and to complete a structured questionnaire to assess my satisfaction with the intervention. In addition, I will be trained on all of the intervention procedures by the primary experimenter. I further understand that all data collected in this study will be confidential and that my name and the students' names will not be associated with any data collected. I understand that I may withdraw my consent for participation at any time without penalty, prejudice, or loss of privilege.

_____

Signature of Teacher

_____

Date

_____

Signature of Witness

APPENDIX D – Teacher Script for the Introduction of the GBG

1) Introduction of the GBG
    - Inform students that there will now be a team competition each day during the set time within the class period. At this time, students are expected to follow all of the classroom rules.

2) State and demonstrate class expectations
    - Remind the class of each classroom rule. If the target behaviors are not a part of the classroom rules, those should also be explained.

    - The teacher should demonstrate the expected appropriate behaviors for the class to see.

3) Show ClassDojo and explain GBG procedures.
    - Show the class the ClassDojo program explaining that it will be used to keep track of teach points.
    - Divide the students into teams allowing them to choose team names and avatars.
    - Explain that at random times you will observe each team and points will be given to teams in which all members are exhibiting appropriate classroom behavior.
    - The class and teacher will develop a list of potential rewards and they will be written on slips of paper and put into a container to be drawn from later.

4) Following the introduction to the class, the GBG will immediately begin
    - Visually scan the classroom periodically and assign one point to teams in which all students are behaving appropriately.
    - Ignore all minor rule violations.

5) End the competition and award the winning team(s)
    - At the end of the game each day the points will be tallied and the winner(s) announced.
    - Select a reward slip from the designated container.
    - Let winners know when they can access their reward.

Percentage of steps completed: _____/ 12
Observers' initials: _____

APPENDIX E – Classroom Observation Data Collection Sheet

Teacher name: _____ Date: _____ Phase: _____ Observer initials: _____

Interval	Disruptive	Appropriate	General Praise	Bx Specific	Interval	Disruptive	Appropriate	General Praise	Bx Specific
1.1					11.1				
1.2					11.2				
1.3					11.3				
1.4					11.4				
1.5					11.5				
1.6					11.6				
2.1					12.1				
2.2					12.2				
2.3					12.3				
2.4					12.4				
2.5					12.5				
2.6					12.6				
3.1					13.1				
3.2					13.2				
3.3					13.3				
3.4					13.4				
3.5					13.5				
3.6					13.6				
4.1					14.1				
4.2					14.2				
4.3					14.3				
4.4					14.4				
4.5					14.5				
4.6					14.6				
5.1					15.1				
5.2					15.2				
5.3					15.3				
5.4					15.4				
5.5					15.5				
5.6					15.6				
6.1					16.1				
6.2					16.2				
6.3					16.3				
6.4					16.4				
6.5					16.5				
6.6					16.6				
7.1					17.1				
7.2					17.2				
7.3					17.3				
7.4					17.4				
7.5					17.5				
7.6					17.6				
8.1					18.1				
8.2					18.2				
8.3					18.3				
8.4					18.4				
8.5					18.5				
8.6					18.6				
9.1					19.1				
9.2					19.2				
9.3					19.3				
9.4					19.4				
9.5					19.5				
9.6					19.6				
10.1					20.1				
10.2					20.2				
10.3					20.3				
10.4					20.4				
10.5					20.5				
10.6					20.6				

APPENDIX F – Behavior Intervention Rating Scale

This survey asks about the intervention that you just implemented in your classroom, which was a positive variation of the Good Behavior Game using ClassDojo. Please evaluate the intervention by circling the number which best describes your agreement or disagreement with each statement. Please answer each question using the following: 1-Strongly Disagree, 2-Disagree, 3-Slightly Disagree, 4-Slightly Agree, 5-Agree, 6-Strongly Agree.

1. This would be an acceptable intervention for the child's problem behavior.	1	2	3	4	5	6
2. Most teachers would find this intervention appropriate for behavior problems in addition to the one described.	1	2	3	4	5	6
3. This intervention should prove effective in changing the child's problem behavior.	1	2	3	4	5	6
4. I would suggest the use of this intervention to other teachers.	1	2	3	4	5	6
5. The child's behavior problem is severe enough to warrant use of this intervention.	1	2	3	4	5	6
6. Most teachers would find this intervention suitable for the behavior problem described.	1	2	3	4	5	6
7. I would be willing to use this intervention in the classroom setting.	1	2	3	4	5	6
8. This intervention would not result in negative side-effects for the child.	1	2	3	4	5	6
9. This intervention would be appropriate for a variety of children.	1	2	3	4	5	6
10. This intervention is consistent with those I have used in classroom settings.	1	2	3	4	5	6
11. The intervention was a fair way to handle the child's problem behavior.	1	2	3	4	5	6
12. This intervention is reasonable for the behavior problem described.	1	2	3	4	5	6
13. I liked the procedures used in this intervention.	1	2	3	4	5	6
14. This intervention was a good way to handle this child's behavior problem.	1	2	3	4	5	6
15. Overall, this intervention would be beneficial for the child.	1	2	3	4	5	6
16. The intervention would quickly improve the child's behavior.	1	2	3	4	5	6
17. The intervention would produce a lasting improvement in the child's behavior.	1	2	3	4	5	6
18. The intervention would improve the child's behavior to the point that it would not noticeably deviate from other classmates' behavior.	1	2	3	4	5	6
19. Soon after using the intervention, the teacher would notice a positive change in the problem behavior.	1	2	3	4	5	6
20. The child's behavior will remain at an improved level even after the intervention is discontinued.	1	2	3	4	5	6
21. Using the intervention should not only improve the child's behavior in the classroom, but also in other settings (e.g., other classrooms, home).	1	2	3	4	5	6
22. When comparing the child with a well-behaved peer before and after use of the intervention, the child's and the peer's behavior would be more alike after using the intervention.	1	2	3	4	5	6
23. The intervention should produce enough improvement in the child's behavior so the behavior no longer is a problem in the classroom	1	2	3	4	5	6
24. Other behaviors related to the problem behavior also are likely to be improved by the intervention.	1	2	3	4	5	6

Taken and adapted from, Elliott, & Von Brock Treuting, 1991, p.46.

APPENDIX G – Treatment Integrity Checklist for the GBG

Date:_____
Observer:_____

Training Steps	**Yes**	**No**
Announce the game/rules.		
Divide students into teams.		
Turn on the ClassDojo program.		
Remind the teams of the number of points needed to win.		
Start the game.		
Assigns points to teams in which all members are behaving appropriately.		
Ignore minor rule violations.		
Announce the end of the game.		
Tally marks and announce winner.		
Allow winning team(s) to access reward.		

Percentage of steps completed: _____

Teacher requires retraining: Yes No

Taken and adapted from, Hunt, 2012, p. 81.

APPENDIX H - Procedural Integrity Checklist for GBG Teacher Training

Date:_____
Observer:_____

Training Steps	**Yes**	**No**
Create classroom rules collaboratively based on teacher's concerns.		
Create ClassDojo account and explain how to use.		
Describe each step (1-10) of GBG procedure (Appendix G).		
Demonstrate examples for each step (1-10) of GBG procedure (Appendix G).		
Allow the teacher to practice the steps of the GBG procedure.		
Allow teacher to practice using ClassDojo.		
Ask the teacher if there are any questions regarding the GBG procedure or ClassDojo.		

Percentage of steps completed: _____

Teacher requires retraining: Yes No

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